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| EXAMINER | |
|---|---|
| MASKULINSKI, MICHAEL C | |
| **ART UNIT** | **PAPER NUMBER** |
| 2113 | |

DATE MAILED: 02/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/972,365 | BUNGERT ET AL. | |
| | Examiner | Art Unit | |
| | Michael C. Maskulinski | 2113 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *21 December 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) *7 and 14-19* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 8-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

**Final Office Action**

***Claim Rejections - 35 USC § 101***

1. In view of the Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility, the rejection of claims 1-6 and 8-13 under 35 U.S.C. 101 as being directed to non-statutory subject matter has been withdrawn.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-6 and 8-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lenz et al., US 2001/0032025 A1, and further in view of Unkle et al., U.S. Patent 6,615,367 B1.

Referring to claim 1:

a. In paragraph 0023, Lenz et al. disclose processor sensors that comprise any device suitable for measuring a process variable, such as temperature, pressure, motion, direction, rate of change, and the like and a process machine (identifying components and sensors in the system).

b. In paragraph 0023, Lenz et al. disclose that the process controller receives a measurement (receiving outputs from said sensors) of a process variable (identifying inputs to each identified component), from a process sensor.

c. In paragraph 0009, Lenz et al. disclose a similarity search engine for similarity searching the measurement against the process attribute information stored in the databases, a means for assigning a similarity search score to the measurement. Further, in paragraph 0035, Lenz et al. disclose that the similarity score may be calculated by any means suitable for indicating the similarity or dissimilarity of the measurement to the information in the databases, against which the measurement is searched. However, Lenz et al. don't explicitly disclose determining a plurality of weight values for a plurality of possible fault conditions for each component based on said functional relationship, wherein the weight values are based on the number of times a possible fault occurred. In column 10, lines 37-47, Unkle et al. disclose that the number of times the fault cluster occurs in association with a specific NTF event is determined. Then the number of times the fault cluster occurs, whether or not associated with this or any NTF event, is determined. A weight is determined for the NTF/fault cluster combination by dividing the number of times the specific NTF event/fault cluster combination occurs by the number of times the combination occurs in all cases. It would have been obvious to one of ordinary skill at the time of the invention to include the weight determination of Unkle et al. into the system of Lenz et al. A person of ordinary skill in the art would have been motivated to make the

modification because Lenz et al. teach using any means suitable for searching the database. Further, it enables a user to trouble shoot faults where no trouble was found (see Unkle et al.: column 5, lines10-32 and column 10, lines 57-65).

d. In paragraph 0005, Lenz et al. disclose collecting and storing process attribute information in a plurality of databases, receiving at least one process measurement from a measurement device, similarity searching the at least one process measurement against the process attribute information stored in the databases, assigning a similarity score to the process measurement, and comparing the similarity score to a match tolerance level (determining functional relationships between the inputs and outputs for each identified component; and determining the most likely fault condition from said possible fault conditions based on said weight values).

Referring to claim 2, in paragraph 0005, Lenz et al. disclose collecting and storing process attribute information in a plurality of databases, receiving at least one process measurement from a measurement device, similarity searching the at least one process measurement against the process attribute information stored in the databases, assigning a similarity score to the process measurement, and comparing the similarity score to a match tolerance level. Further, in paragraph 0026, Lenz et al. disclose that when the similarity score is below the match tolerance level, then the process controller may determine that the measurement received is inaccurate (using the identified inputs and outputs of a specific component and sensors and the functional relationships of a corresponding generic component to identify a possible fault condition).

Referring to claim 3, in paragraph 0028, Lenz et al. disclose that process attribute information is stored in a plurality of disparate databases. The databases may comprise process variable databases, condition monitoring databases, process machine attribute databases, etc. (defining component libraries that describe the functional relationships of the generic components).

Referring to claim 4, in paragraph 0024, Lenz et al. disclose that the similarity searching may be performed by a similarity search engine (SSE) that resides on the process controller (creating a diagnostic program from the functional relationships of the generic components associated with each component).

Referring to claim 5, in paragraph 0026, Lenz et al. disclose that it is determined whether the similarity score meets or exceeds the match tolerance level. Where the similarity score is below the match tolerance level, then the process controller may determine that the measurement received is inaccurate (transforming the functional relationships into fault conditions).

Referring to claim 6, in paragraph 0009, Lenz et al. disclose a similarity search engine for similarity searching the measurement against the process attribute information stored in the databases, a means for assigning a similarity search score to the measurement, a means for comparing the similarity search score to a match tolerance level (the step of transforming is implemented in an off-line phase during which the diagnostic program is created, and an on-line phase during which available inputs and outputs are supplied to the transformed functional relationships in the control program, to identify fault conditions).

Referring to claims 8 and 13, in paragraph 0047, Lenz et al. disclose that process machine monitoring variables may comprise any variables that can be related physically or mathematically to machine condition or performance. Process machine monitoring variables may include, for example, vibration, shaft alignment, bearing temperature, motor current, flux data, etc. (the step of including state information for at least one of the components to define the state of the component at a different time).

Referring to claim 9:

a. In paragraph 0023, Lenz et al. disclose processor sensors that comprise any device suitable for measuring a process variable, such as temperature, pressure, motion, direction, rate of change, and the like and process machines (identifying the functional elements and associated sensors in the system).

b. In paragraph 0023, Lenz et al. disclose that the process controller receives a measurement (receiving outputs from said associated sensors) of a process variable (defining inputs for each of the functional elements), from a process sensor.

c. In paragraph 0005, Lenz et al. disclose collecting and storing process attribute information in a plurality of databases, receiving at least one process measurement from a measurement device, similarity searching the at least one process measurement against the process attribute information stored in the databases, assigning a similarity score to the process measurement, and comparing the similarity score to a match tolerance level (determining functional relationships between the inputs and outputs for each functional element).

d. In paragraph 0060, Lenz et al. disclose that the invention may be implemented using standard programming or engineering techniques including computer programming software, firmware, hardware or any combination or subset thereof (expressing the functional relationships using a programming language).

e. In paragraph 0009, Lenz et al. disclose a similarity search engine for similarity searching the measurement against the process attribute information stored in the databases, a means for assigning a similarity search score to the measurement. Further, in paragraph 0035, Lenz et al. disclose that the similarity score may be calculated by any means suitable for indicating the similarity or dissimilarity of the measurement to the information in the databases, against which the measurement is searched. However, Lenz et al. don't explicitly disclose determining a plurality of weight values for a plurality of possible fault conditions for each component based on said functional relationship, wherein the weight values are based on the number of times a possible fault occurred. In column 10, lines 37-47, Unkle et al. disclose that the number of times the fault cluster occurs in association with a specific NTF event is determined. Then the number of times the fault cluster occurs, whether or not associated with this or any NTF event, is determined. A weight is determined for the NTF/fault cluster combination by dividing the number of times the specific NTF event/fault cluster combination occurs by the number of times the combination occurs in all cases. It would have been obvious to one of ordinary skill at the time of the invention to

include the weight determination of Unkle et al. into the system of Lenz et al. A person of ordinary skill in the art would have been motivated to make the modification because Lenz et al. teach using any means suitable for searching the database. Further, it enables a user to trouble shoot faults where no trouble was found (see Unkle et al.: column 5, lines10-32 and column 10, lines 57-65).

f. In paragraph 0005, Lenz et al. disclose collecting and storing process attribute information in a plurality of databases, receiving at least one process measurement from a measurement device, similarity searching the at least one process measurement against the process attribute information stored in the databases, assigning a similarity score to the process measurement, and comparing the similarity score to a match tolerance level (determining the most likely fault condition from said possible fault conditions based on said weight values).

Referring to claim 10, in paragraph 0060, Lenz et al. disclose that the invention may be implemented using standard programming or engineering techniques including computer programming software, firmware, hardware or any combination or subset thereof (wherein the programming language is a symbolic language).

Referring to claim 11, in paragraph 0028, Lenz et al. disclose that process attribute information is stored in a plurality of disparate databases. The databases may comprise process variable databases, condition monitoring databases, process machine attribute databases, etc. (defining functional relationships for at least some of

the functional elements includes utilizing a component library that defines the functional relationships between inputs and outputs of at least one generic element).

Referring to claim 12, in paragraph 0005, Lenz et al. disclose collecting and storing process attribute information in a plurality of databases, receiving at least one process measurement from a measurement device, similarity searching the at least one process measurement against the process attribute information stored in the databases, assigning a similarity score to the process measurement, and comparing the similarity score to a match tolerance level. Further, in paragraph 0026, Lenz et al. disclose that when the similarity score is below the match tolerance level, then the process controller may determine that the measurement received is inaccurate (the step of defining the functional relationships includes the step of defining functional relationships and inputs and outputs of the generic elements corresponding to the functional elements in the system).

4. Claims 1-5 and 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ramadei et al., US 2002/0166082 A1, and further in view of Unkle et al., U.S. Patent 6,615,367 B1.

Referring to claim 1:

a. In paragraph 0014, Ramadei et al. disclose sensors that detect the performance of modules (identifying components and sensors in the system).

b. In paragraph 0014, Ramadei et al. disclose that the sensors thus detect the performance of the modules and the embedded controllers store the

modules' performance as log files (identifying inputs to each identified component and receiving outputs from said sensors).

g. In paragraph 0020, Ramadei et al. disclose that filters represent actual and/or potential fault patterns, and/or error codes. A module produces a result file delineating which filters (which represent fault patterns) and error codes (which represent faults) were found and a degree of importance/relevance. However, Ramadei et al. don't explicitly disclose determining a plurality of weight values for a plurality of possible fault conditions for each component based on said functional relationship, wherein the weight values are based on the number of times a possible fault occurred. In column 10, lines 37-47, Unkle et al. disclose that the number of times the fault cluster occurs in association with a specific NTF event is determined. Then the number of times the fault cluster occurs, whether or not associated with this or any NTF event, is determined. A weight is determined for the NTF/fault cluster combination by dividing the number of times the specific NTF event/fault cluster combination occurs by the number of times the combination occurs in all cases. It would have been obvious to one of ordinary skill at the time of the invention to include the weight determination of Unkle et al. into the system of Lenz et al. A person of ordinary skill in the art would have been motivated to make the modification because it enables a user to trouble shoot faults where no trouble was found (see Unkle et al.: column 5, lines10-32 and column 10, lines 57-65).

c. In paragraph 0016, Ramadei et al. disclose that filter parameters are used to construct filters where the parameters correlate to various machines and module behavior patterns or signatures (determining functional relationships between the inputs and outputs for each identified component; and determining the most likely fault condition from said possible fault conditions based on said weight values).

Referring to claim 2, in paragraph 0016, Ramadei et al. disclose that filters and filter parameters are determined by one or more individuals, who are familiar with the operation and performance expectations of a machine and its internal modules (using the identified inputs and outputs of a specific component and sensors and the functional relationships of a corresponding generic component to identify a possible fault condition).

Referring to claim 3, in paragraph 0016, Ramadei et al. disclose that filter parameters are unique to each type of module and are structured to note any deviations from a known performance requirement of a module (defining component libraries that describe the functional relationships of the generic components).

Referring to claim 4, in paragraph 0016, Ramadei et al. disclose creating a fault tree (creating a diagnostic program from the functional relationships of the generic components associated with each component).

Referring to claim 5, in paragraph 0016, Ramadei et al. teach transforming the functional relationships into fault conditions.

Referring to claim 9:

a. In paragraph 0014, Ramadei et al. disclose sensors that detect the performance of modules (identifying the functional elements and associated sensors in the system).

b. In paragraph 0014, Ramadei et al. disclose that the sensors thus detect the performance of the modules and the embedded controllers store the modules' performance as log files (defining inputs for each of the functional elements and receiving outputs from said associated sensors).

h. In paragraph 0020, Ramadei et al. disclose that filters represent actual and/or potential fault patterns, and/or error codes. A module produces a result file delineating which filters (which represent fault patterns) and error codes (which represent faults) were found and a degree of importance/relevance. However, Ramadei et al. don't explicitly disclose determining a plurality of weight values for a plurality of possible fault conditions for each component based on said functional relationship, wherein the weight values are based on the number of times a possible fault occurred. In column 10, lines 37-47, Unkle et al. disclose that the number of times the fault cluster occurs in association with a specific NTF event is determined. Then the number of times the fault cluster occurs, whether or not associated with this or any NTF event, is determined. A weight is determined for the NTF/fault cluster combination by dividing the number of times the specific NTF event/fault cluster combination occurs by the number of times the combination occurs in all cases. It would have been obvious to one of ordinary skill at the time of the invention to include the weight determination of

Unkle et al. into the system of Lenz et al. A person of ordinary skill in the art would have been motivated to make the modification because it enables a user to trouble shoot faults where no trouble was found (see Unkle et al.: column 5, lines10-32 and column 10, lines 57-65)

c. In paragraph 0016, Ramadei et al. disclose that filter parameters are used to construct filters where the parameters correlate to various machines and module behavior patterns or signatures (defining functional relationships between inputs and associated outputs for each functional element; and determining the most likely fault condition from said possible fault conditions based on said weight values).

d. In paragraph 0012, Ramadei et al. teach expressing the functional relationships using a programming language

Referring to claim 10, in paragraph 0012, Ramadei et al. disclose Microsoft Access (wherein the programming language is a symbolic language).

Referring to claim 11, in paragraph 0016, Ramadei et al. disclose that filter parameters are unique to each type of module and are structured to note any deviations from a known performance requirement of a module (defining functional relationships for at least some of the functional elements includes utilizing a component library that defines the functional relationships between inputs and outputs of at least one generic element).

Referring to claim 12, in paragraph 0016, Ramadei et al. disclose that filter parameters are unique to each type of module and are structured to note any deviations

from a known performance requirement of a module (the step of defining the functional relationships includes the step of defining functional relationships and inputs and outputs of the generic elements corresponding to the functional elements in the system).

***Response to Arguments***

5. Applicant's arguments filed December 21, 2005 have been fully considered but they are not persuasive.

6. On pages 5-6 under section Rejections under 35 U.S.C. § 102, the Applicant argues that Lenz et al. and Ramadei et al. don't constitute prior art and submits the original German invention disclosure forms submitted to the internal Siemens patent department on June 17, 1998. The submission of only the invention disclosure forms is not sufficient enough to overcome the rejection under 35 U.S.C. § 102.

***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Maskulinski whose telephone number is (571) 272-3649. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert W. Beausoliel can be reached on (571) 272-3645. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MM

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